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10/527,898	09/28/2006	Hansjoerg Haisch	20020275-02	9078

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EXAMINER	
HANSEN, JONATHAN M	
ART UNIT	PAPER NUMBER
2886	

NOTIFICATION DATE	DELIVERY MODE
07/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPOPS.LEGAL@agilent.com

Office Action Summary	Application No.	Applicant(s)	
	10/527,898	HAISCH, HANSJOERG	
	Examiner	Art Unit	
	JONATHAN M. HANSEN	2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 11-19* is/are rejected.

7)☒ Claim(s) *9,10,20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/14/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The preliminary amendment filed on 03/14/2005 is not entered into the file due to the fact that no reply was timely received in response to the letter of Non-Compliance mailed on 05/13/2009. However, the amendment was only non-compliant as to a matter regarding the specification and all of the limitations of the original claims appear to be present in the amended claims. Therefore, the claims were examined in view of the amendments presented on 03/14/2005. The applicant is respectfully requested to resubmit the changes presented in the preliminary amendment in the response to this Office Action, along with any amendments they feel are necessary in response to the rejection below.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings contain handwritten numbers. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

Claim **21** recites the limitation "the reference code". There is insufficient antecedent basis for this limitation in the claim. The claim may have been intended to have been dependent from claim 20 which would alleviate that antecedent basis problem above.

Claims **1 and 11** are objected to because of the following informalities: The claims recite "polarization dependent analyzing" in the first lines of each claim. The claims were understood to have been intended to recite "polarization dependent interferometry of an optical signal". Appropriate correction is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims **1-8** are rejected under 35 U.S.C. 102(e) as being anticipated by **US Patent 7,253, 906 to Friessnegg et al**.

In regards to claims **1 and 7**, Friessnegg discloses and shows in Figure 1 below a method of polarization dependent analyzing an optical signal provided to a DUT, comprising the steps of:

using the optical signal as a measurement signal (14) of an interferometer (12) (col. 4, ll. 13-25),

splitting the optical signal at least into a first signal part having an initial first polarization and a second signal part having an initial second polarization (16) (col. 4, ll. 26-57),

delaying (applicant's coding) the first signal part using a first delay (applicant's first code) and delaying (applicant's coding) the second signal part using a second delay (applicant's second code) (col. 4, ll. 33-44),

providing the coded signal parts to the DUT (20) (col. 4, ll. 44-46),

superimposing a DUT-signal coming from the DUT in response to the delayed signal parts with a reference signal (15) of the interferometer to provide a resulting superimposed signal (21) (col. 4, ll. 51-56),

detecting the resulting superimposed signal (22) (col. 4, ll. 51-56), and

determining a first part of the DUT-signal corresponding to the first signal part by means of the first code and determining a second part of the DUT-signal corresponding to the second signal part by means of the second code (col. 4, ll. 57 to col. 5, ll. 33) (col. 2, ll. 30-33).

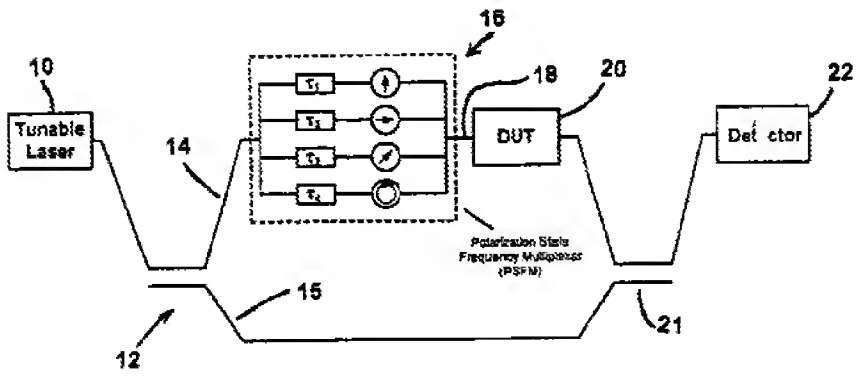

FIG. 1

In regards to claim **2**, Friessnegg discloses and shows in Figure 1 above the method, further comprising the steps of:

additionally splitting the optical signal (14) into a third signal part having an initial third polarization and a fourth signal part having an initial fourth polarization (16),

delaying the third signal part using a third delay and delaying the fourth signal part using a fourth delay (16),

providing the first, the second, the third and the fourth delayed signal parts to the DUT (20),

detecting a DUT signal coming from the DUT in response to the coded signal parts (22), and

determining a first part of the DUT-signal corresponding to the first signal part by means of the first code and determining a second part of the DUT-signal corresponding to the second signal by means of the second code and determining a third part of the DUT-signal corresponding to the third signal part by means of the third code and determining a fourth part of the DUT-signal corresponding to the fourth signal part by means of the fourth code (col. 4, ll. 57 to col. 5, ll. 33) (col. 2, ll. 30-33).

In regards to claims **3-7**, Friessnegg discloses the method, comprising at least one of the features:

the step of coding includes at least one of a group comprising:

delaying each signal part from the others using different optical path lengths (applicant's any manipulation of the signal parts to unambiguously identify each signal part (col. 4, ll. 31-44).

In regards to claim **8**, Friessnegg discloses the method, further comprising the steps of: splitting the resulting superimposed signal into two, preferably orthogonal parts; and detecting each part separately (col. 1, ll. 57-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **11-13 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Friessnegg**, in view of **US Patent 6,144,450 to Jopson et al**.

In regards to claims **11 and 18**, Friessnegg discloses and shows in Figures 1 and 5, an apparatus for polarization dependent analyzing an optical signal transmitted through a DUT, comprising:

a first coupler (12) adapted for providing a first part of the optical signal to a measurement arm (14) of an interferometer, and for providing a second part of the optical signal as a reference signal to a reference arm (15),

a first beam splitter (32) adapted splitting the first part of the optical signal into a first signal part having an initial first polarization (36) and a second signal part having an initial second polarization (col. 6, ll. 38-60),

a first modulator (34) adapted delaying the first signal part using a first delay (col. 4, ll. 31-44),

a second modulator (34) adapted delaying the second signal part using a second delay (col. 4, ll. 31-44),

a coupler (38) connected to the modulators adapted for reuniting both delayed signal parts (col. 4, ll. 44-46), and providing both coded signal parts to the DUT (20),

a second coupler (21) adapted for superimposing a DUT-signal coming from the DUT in response to the delayed signal parts with the reference signal (15) of the interferometer (12) to provide a resulting superimposed signals to the detector (22) (col. 4, ll. 51-56),

a detector (22) adapted for detecting the resulting superimposed signal (col. 5, ll. 30-33).

He differs from the limitations in that he does not explicitly disclose the apparatus further comprising:

a first correlator adapted for determining a first signal part of the DUT-signal corresponding to the first signal part by means of the first code, and

a second correlator adapted for determining a second part of the DUT-signal corresponding to the second signal part by means of the second code.

However, Jopson teaches an apparatus and method that utilizes a polarization measuring device comprising modulation filters (applicant's correlators), wherein the modulation filters extract electrical signals corresponding to each of the polarization components (col. 3, ll. 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Friessnegg to include a first correlator adapted for determining a first signal part of the DUT-signal corresponding to the first signal part by means of the first code, and a second correlator adapted for determining a second part of the DUT-signal corresponding to the second signal part by means of the second code, for the advantage of detecting the Stokes components associated with each polarization.

In regards to claim **12**, Friessnegg discloses the apparatus, wherein the first beam splitter (32) is designed to additionally split the optical signal into a third signal part having an initial third polarization and a fourth signal part having an initial fourth polarization (col. 6, ll. 38-60), and further comprising:

a third modulator (34) adapted for delaying the third signal part using a third delay,

a fourth modulator (34) adapted for delaying the fourth signal part using a fourth delay,

wherein the coupler (21) is additionally connected to the third and the fourth modulator and is designed to reunite the coded signal parts and to provide the first, the second, the third and the fourth coded signal parts to the DUT (col. 4, ll. 51-56).

He differs from the limitations in that he does not explicitly disclose the apparatus further comprising:

a third correlator adapted for determining a third signal part of the DUT-signal corresponding to the third signal parts by means of the third code, and

a fourth correlator adapted for determining a fourth part of the DUT-signal corresponding to the fourth signal part by means of the fourth code.

However, Jopson teaches an apparatus and method that utilizes a polarization measuring device comprising modulation filters (applicant's correlators), wherein the modulation filters extract electrical signals corresponding to each of the polarization components (col. 3, ll. 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Friessnegg to include a third correlator adapted for determining a third signal part of the DUT-signal corresponding to the third signal parts by means of the third code, and a fourth correlator adapted for determining a fourth part of the DUT-signal corresponding to the fourth signal part by means of the fourth code, for the advantage of detecting the Stokes components associated with each polarization.

In regards to claims **13-17**, Friessnegg discloses the apparatus, comprising at least one of the features:

delaying each signal part from the others using different optical path lengths (applicant's any manipulation of the signal parts to unambiguously identify each signal part (col. 4, ll. 31-44).

Claim **19** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Friessnegg**, in view of **Jopson**, and further in view of **US Publication 2002/0113972 to Rosenfeldt et al**.

In regards to claim **19**, Friessnegg discloses the apparatus, further comprising:

two detectors to simultaneously detect the signals associated with two orthogonal polarization states (col. 1, ll. 57-60).

He differs from the limitations in that he is silent to the apparatus further comprising:

a second beam splitter adapted for splitting the resulting superimposed signal into two, preferably orthogonal, parts.

However, Rosenfeldt teaches and shows a measurement apparatus that utilizes a polarization beam splitter (32) and two detectors (38 and 40) to simultaneously detect two signals associated with two polarization states (par. 59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Friessnegg, when modified by Jopson, to include a second beam splitter adapted for splitting the resulting superimposed signal into two, preferably orthogonal, parts for the advantage of allowing the signals associated with the two orthogonal polarization states to be simultaneously detected.

Allowable Subject Matter

Claims **9, 10, 20 and 21** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim **9**, the prior art of record, taken alone or in combination, fails to disclose or render obvious providing the reference signal with a delay and with a reference code, and identifying the reference signal by multiplying the reference signal with the reference code, in combination with the rest of the limitations of the claim. Claim **10** is allowable due to its dependency upon claim 9.

As to claim **20**, the prior art of record, taken alone or in combination, fails to disclose or render obvious a delay line in the reference arm adapted for providing the reference signal with a delay and with a reference code, and a fifth correlator adapted for identifying the reference signal by multiplying the reference signal with the reference code, in combination with the rest of the limitations of the claim.

As to claim **21**, the prior art of record, taken alone or in combination, fails to disclose or render obvious a fifth modulator adapted to apply the reference code to the reference signal which fulfills the following conditions: the product of the reference code with the first code is orthogonal with the product of the reference code with the second code, the first code and the reference code are non-orthogonal, and the second code and the reference code are non-orthogonal, in combination with the rest of the limitations of the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN M. HANSEN whose telephone number is

(571)270-1736. The examiner can normally be reached on Monday through Friday 9:30AM to 6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on 571-272-2287. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMH 07/13/2009
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